SEQUENCE LISTING

<110> Carl Johan Friddle
      Turner, C. Alexander Jr.
      Walke, D. Wade
      Hilbun, Erin
      Nepomnichy, Boris
      Hu, Yi

<120> Novel Human Proteases and
      Polynucleotides Encoding the Same

<130> LEX-0221-USA

<140> US 09/938,330
<141> 2001-08-22

<150> US 60/227,104
<151> 2000-08-22

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<151> 2000-09-19

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1   5   10   15

gcg ctc tgc gcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct   96
Ala Leu Cys Ala Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20   25   30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35   40   45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50   55   60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser

1

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agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg    288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                    85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt    336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
                100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
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2

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aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg     960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315             320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt    1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325             330             335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac    1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg    1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355             360             365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc    1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370             375             380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc    1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca    1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405             410             415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc    1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435             440             445

tac ctc ccg tag                                                     1356
Tyr Leu Pro *
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<213> homo sapiens

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Ala Leu Cys Ala Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
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Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
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     50                      55                      60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                    70                      75                      80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                      90                      95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
                100                     105                     110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
                115                     120                     125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
                130                     135                     140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                     150                     155                     160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                     170                     175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                     185                     190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
                195                     200                     205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
                210                     215                     220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                     230                     235                     240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                     250                     255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                     265                     270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                275                     280                     285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
290                     295                     300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                     310                     315                     320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                     330                     335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                     345                     350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                355                     360                     365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
370                     375                     380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                     390                     395                     400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                     410                     415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420                     425                     430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
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Tyr Leu Pro
450


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4

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
            130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
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```
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac      672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg      720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                     230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca      768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                    245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt      816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg      864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275                 280                 285

aat atc gtg tgc tta cag gga agt cca taa                              894
Asn Ile Val Cys Leu Gln Gly Ser Pro  *
        290                 295
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β1

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<211> 297
<212> PRT
<213> homo sapiens

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Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
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6

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Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185             190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285
Asn Ile Val Cys Leu Gln Gly Ser Pro
    290                 295


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<212> DNA
<213> homo sapiens

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
  1               5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct      96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                 20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt     144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
             35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct     192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
     50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc     240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg     288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                 85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt     336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
             100                 105                 110
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```
ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335
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8

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cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
            370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                    405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
            450                 455                 460

acc tgc ccg ggc ggc cgc tcg agc cct ata gtg agt cgt att agg atg   1440
Thr Cys Pro Gly Gly Arg Ser Ser Pro Ile Val Ser Arg Ile Arg Met
465                 470                 475                 480

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Ala Ala Thr Pro Phe Thr  *
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<212> PRT
<213> homo sapiens

<400> 6
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                20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
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9

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65                    70                      75                      80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85          90                      95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100             105                     110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115             120                     125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130             135             140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155             160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165             170             175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180             185             190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195             200             205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210             215             220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245             250             255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260             265             270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275             280             285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290             295             300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315             320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325             330             335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355             360             365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370             375             380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405             410             415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435             440             445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450             455             460
Thr Cys Pro Gly Gly Arg Ser Ser Pro Ile Val Ser Arg Ile Arg Met
465             470             475             480
Ala Ala Thr Pro Phe Thr
                485
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<210> 7

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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt      48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct      96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt     144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
             35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct     192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
         50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc     240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg     288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                 85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt     336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
             100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta     384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
             115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc     432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
         130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga     480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc     528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                 165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttt att gag cct ctg gag cgg     576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
             180                 185                 190
```

11

```
ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                 410                 415
```

12

```
gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc    1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc    1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
            450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag    1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc    1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac    1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500                 505                 510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag    1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515                 520                 525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg    1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                 535                 540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag    1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580                 585                 590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac    1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
            610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac    1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640
```

13

```
gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                     650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc    2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                     665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc    2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
                675                     680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga    2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
                690                     695                 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg    2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                     710                     715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca    2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                     730                 735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac    2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
                740                     745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc    2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
                755                     760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag    2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
                770                     775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                     790                     795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                     810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                820                     825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
                835                     840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
850                     855                     860
```

14

```
gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870             875             880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885             890             895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                900             905             910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915             920             925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930             935             940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950             955             960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965             970             975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                980             985             990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
                995             1000            1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010            1015            1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025            1030            1035            1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045            1050            1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc    3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
            1060            1065            1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac    3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
            1075            1080            1085
```

15

```
cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac     3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
        1090            1095            1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct     3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105            1110            1115            1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct     3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
            1125            1130            1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca     3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
            1140            1145            1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc     3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
        1155            1160            1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct     3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
        1170            1175            1180

acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca     3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185            1190            1195            1200

gtc cct gag gac aaa ggg caa cct gga gaa gac ctg aga cct gcc cgg     3648
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg
            1205            1210            1215

gcg gcc gct cga gcc cta tag                                         3669
Ala Ala Ala Arg Ala Leu  *
            1220
```

```
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
```

16

```
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
        100                     105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                     150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                     230                 235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                     310                 315                 320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325                 330                 335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355                 360                 365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370                 375                 380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                     390                 395                 400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405                 410                 415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435                 440                 445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450                 455                 460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                     470                 475                 480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
            485                 490                 495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500                 505                 510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515                 520                 525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                 535                 540
```

17

```
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580                 585                 590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                 615                 620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                645                 650                 655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                 665                 670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                 680                 685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690                 695                 700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                 760                 765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770                 775                 780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
        820                 825                 830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850                 855                 860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
        915                 920                 925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930                 935                 940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990
```

18

```
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995               1000               1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
        1010              1015               1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025              1030               1035               1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
        1045               1050               1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
        1060               1065               1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
        1075               1080               1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
        1090               1095               1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105               1110               1115               1120
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
              1125               1130               1135
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
        1140               1145               1150
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
        1155               1160               1165
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
        1170               1175               1180
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185               1190               1195               1200
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg
              1205               1210               1215
Ala Ala Ala Arg Ala Leu
              1220


<210> 9
<211> 3660
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<213> homo sapiens

<220>
<221> CDS
<222> (1)...(3660)

<400> 9
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5               10              15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
              20              25              30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35              40              45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
```

19

```
gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65              70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac   672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg   720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca   768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt   816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg   864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
```

20

```
aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata   912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg   960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt  1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac  1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg  1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355                 360                 365

tat gca ccc swy wct ggc atg tgt cac ccc ctg agg agc tgt gcc ctc  1152
Tyr Ala Pro Xaa Xaa Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc  1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca  1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc  1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc  1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc  1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag  1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc  1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac  1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
```

```
cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515                 520                 525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                 535                 540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
            565                 570                 575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580                 585                 590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                 665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675                 680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                 695                 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
```

22

```
gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac    2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc    2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag    2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
            770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
            850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
```

23

```
cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc   2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag   2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat   3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
                995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat   3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca   3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag   3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
                1045                1050                1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag   3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
                1060                1065                1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc   3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
                1075                1080                1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca   3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
        1090                1095                1100

gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc   3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                1110                1115                1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag   3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                1125                1130                1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca   3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
                1140                1145                1150

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct   3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
        1155                1160                1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc   3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
```

24

```
ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gag    3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185            1190                1195                1200

gac aaa ggg caa cct gga gaa gac ctg aga cct gcc cgg gcg gcc gct    3648
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg Ala Ala Ala
                1205                1210                1215

cga gcc cta tag                                                    3660
Arg Ala Leu  *
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<210> 10
<211> 1219
<212> PRT
<213> homo sapiens

<400> 10

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
  1               5                  10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
```

25

```
                275                    280                    285
    Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                    295                    300
    Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
    305                    310                    315                    320
    Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                        325                    330                    335
    Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                    345                    350
    His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                355                    360                    365
    Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370                    375                    380
    Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
    385                    390                    395                    400
    Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                        405                    410                    415
    Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420                    425                    430
    Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                435                    440                    445
    Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450                    455                    460
    Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
    465                    470                    475                    480
    Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                        485                    490                    495
    Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                500                    505                    510
    Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                515                    520                    525
    Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                    535                    540
    Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
    545                    550                    555                    560
    Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                        565                    570                    575
    Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
                580                    585                    590
    Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
                595                    600                    605
    Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
        610                    615                    620
    Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
    625                    630                    635                    640
    Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                        645                    650                    655
    Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                    665                    670
    Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                    680                    685
    Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                    695                    700
    Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
    705                    710                    715                    720
    Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
```

26

725   730   735

Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His

740   745   750

Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro

755   760   765

Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu

785   790   795   800

Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly

805   810   815

Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly

820   825   830

Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu

835   840   845

Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr

850   855   860

Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly

865   870   875   880

Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His

885   890   895

His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro

900   905   910

Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val

915   920   925

Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val

930   935   940

Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His

945   950   955   960

Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg

965   970   975

Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala

980   985   990

Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln

995   1000   1005

Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp

1010   1015   1020

Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn

1025   1030   1035   1040

His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro

1045   1050   1055

Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys

1060   1065   1070

Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln

1075   1080   1085

Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu

1090   1095   1100

Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro

1105   1110   1115   1120

Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro

1125   1130   1135

Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys

1140   1145   1150

Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro

1155   1160   1165

Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro

Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro

β1

```
      1170                    1175                  1180
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                    1190                  1195                  1200
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg Ala Ala Ala
                  1205                  1210                  1215
Arg Ala Leu
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<210> 11
<211> 3651
<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (1)...(3651)

<400> 11

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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1            5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
              20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
          35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
          50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
              85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
              100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
              115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
          130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
```

28

```
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155             160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165             170             175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180             185             190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195             200             205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210             215             220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245             250             255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260             265             270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275             280             285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290             295             300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315             320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt    1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325             330             335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac    1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg    1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355             360             365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc    1152
```

29

```
        Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
            370                 375                 380

        aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc    1200
        Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
        385                 390                 395                 400

        ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca    1248
        Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                            405                 410                 415

        gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc    1296
        Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                        420                 425                 430

        ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
        Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                    435                 440                 445

        tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc    1392
        Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
            450                 455                 460

        tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag    1440
        Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
        465                 470                 475                 480

        cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc    1488
        Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                        485                 490                 495

        agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac    1536
        Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                        500                 505                 510

        cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag    1584
        Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                    515                 520                 525

        tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg    1632
        Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                 535                 540

        ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag    1680
        Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
        545                 550                 555                 560

        ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
        Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                        565                 570                 575

        cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
        Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
                    580                 585                 590

        ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
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                                        30

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Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                 665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                 680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                 695                 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
                740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg   2496
```

31

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        Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                820                     825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                     840                     845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850                     855                     860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                     870                     875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                    885                     890                     895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                900                     905                     910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
        915                     920                     925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930                     935                     940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                     950                     955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                     970                     975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                980                     985                     990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                     1000                    1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010                    1015                    1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                    1030                    1035                    1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
```

32

```
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
             1045                    1050                 1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc    3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
             1060                    1065                 1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac    3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
             1075                    1080                 1085

cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac    3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
             1090                    1095                 1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct    3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                     1110                 1115                 1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct    3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
             1125                    1130                 1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca    3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
             1140                    1145                 1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc    3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
             1155                    1160                 1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct    3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
1170                     1175                 1180

acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca    3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                     1190                 1195                 1200

gtc cct gac ctg ccc ggg cgg ccg ctc gag ccc tat agt gag tcg tat    3648
Val Pro Asp Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr
             1205                    1210                 1215

tag                                                                3651
*
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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15
```

Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
         20   25   30

Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
         35   40   45

Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
   50   55   60

Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65   70   75   80

Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
         85   90   95

Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
        100   105   110

Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115   120   125

Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
   130   135   140

Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145   150   155   160

Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
        165   170   175

Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
        180   185   190

Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195   200   205

Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu·His
   210   215   220

Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225   230   235   240

Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
         245   250   255

Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
        260   265   270

Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275   280   285

Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
   290   295   300

Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305   310   315   320

Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
         325   330   335

Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
        340   345   350

His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355   360   365

Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
   370   375   380

Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385   390   395   400

Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
             405   410   415

Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
        420   425   430

Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435   440   445

Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
   450   455   460

```
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500                 505                 510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515                 520                 525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                 535                 540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580                 585                 590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                 615                 620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                645                 650                 655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                 665                 670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                 680                 685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                 695                 700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                 760                 765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770                 775                 780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850                 855                 860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910
```

35

```
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
        915                 920                 925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
        930                 935                 940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                980                 985                 990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                1045                1050                1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
                1060                1065                1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
                1075                1080                1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
        1090                1095                1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                1110                1115                1120
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
                1125                1130                1135
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
                1140                1145                1150
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
                1155                1160                1165
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
        1170                1175                1180
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                1190                1195                1200
Val Pro Asp Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr
                1205                1210                1215
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<211> 3642
<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (1)...(3642)

<400> 13
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                  10                  15


gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
```

36

```
gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt    144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
         35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct    192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
     50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc    240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg    288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                 85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt    336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
             100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
         115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
     130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                 165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
             180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
         195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
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ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt   816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
        260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg   864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata   912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
305                 310                 315

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg   960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt  1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac  1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg  1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc  1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc  1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca  1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc  1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc  1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc  1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag  1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
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38

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cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc    1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac    1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                500                 505                 510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag    1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                515                 520                 525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg    1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                 535                 540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag    1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
                580                 585                 590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
                595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac    1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
    610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac    1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc    2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                 665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc    2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
                675                 680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga    2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
```

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gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                    725                 730                 735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
                740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg   2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc   2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga   2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac   2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc   2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg   2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg   2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
```

```
cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac   2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga   2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc   2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag   2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat   3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat   3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
    1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca   3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag   3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045                1050                1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag   3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060                1065                1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc   3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075                1080                1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca   3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
    1090                1095                1100

gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc   3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                1110                1115                1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag   3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
            1125                1130                1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca   3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
```

41

```
                  1140                1145                1150

      gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct    3504
      Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
              1155                1160                1165

      gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc    3552
      Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
          1170                1175                1180

      ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gac    3600
      Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Asp
      1185                1190                1195                1200

      ctg ccc ggg cgg ccg ctc gag ccc tat agt gag tcg tat tag           3642
      Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr  *
                      1205                1210
```

<210> 14
<211> 1213
<212> PRT
<213> homo sapiens

<400> 14
```
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1                   5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
```

42

```
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
              245                   250                        255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
          260                   265                   270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
          275                   280                   285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                   295                   300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                   310                   315                   320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
              325                   330                        335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
              340                   345                   350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
              355                   360                   365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                   375                   380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                   390                   395                   400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
              405                   410                   415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
              420                   425                   430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
              435                   440                   445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                   455                   460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                   470                   475                   480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
              485                   490                   495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
              500                   505                   510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
              515                   520                   525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                   535                   540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                   550                   555                   560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
              565                   570                   575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
              580                   585                   590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
          595                   600                   605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                   615                   620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                   630                   635                   640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
              645                   650                   655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
              660                   665                   670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
    675                   680                   685
```

43

```
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690                 695             700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710                 715                     720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730                     735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745                     750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755             760             765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770             775             780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790             795                     800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805             810             815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
        820             825             830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835             840             845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850             855             860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875                     880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885             890             895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
        900             905             910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
    915             920             925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930             935             940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945             950             955                     960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965             970             975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
        980             985             990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995             1000            1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
    1010            1015            1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025            1030            1035                    1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
            1045            1050            1055
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060            1065            1070
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075            1080            1085
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
    1090            1095            1100
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105            1110            1115                    1120
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
            1125            1130            1135
```

44

```
    Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
              1140                1145                1150
    Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
          1155                1160                1165
    Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
        1170                1175                1180
    Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Asp
    1185                1190                1195                1200
    Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr
                  1205                1210
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<210> 15
<211> 3708
<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (1)...(3708)

<400> 15

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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt   48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1                   5                   10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct   96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
```

45

```
cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
```

46

```
tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370             375             380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405             410             415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435             440             445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450             455             460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465             470             475             480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
            485             490             495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500             505             510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515             520             525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530             535             540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545             550             555             560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565             570             575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
```

```
ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                 665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                 680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                 695                 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
```

48

```
ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
        820             825             830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835             840             845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
        850             855             860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875             880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885             890             895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900             905             910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915             920             925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
        930             935             940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945             950             955             960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965             970             975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980             985             990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995             1000            1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010            1015            1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
```

49

```
gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag     3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045            1050                1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc     3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
            1060            1065                1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac     3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
            1075            1080                1085

cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac     3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
            1090            1095                1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct     3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                1110                1115                1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct     3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
            1125                1130                1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca     3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
            1140                1145                1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc     3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
            1155                1160                1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct     3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
            1170                1175                1180

acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca     3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                1190                1195                1200

gtc cct gag gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc     3648
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
            1205                1210                1215

acc agc ctc cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tat agt     3696
Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser
            1220                1225                1230

gag tct gat tag                                                     3708
Glu Ser Asp  *
            1235
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<210> 16

<211> 1235
<212> PRT
<213> homo sapiens

<400> 16

Met	Ala	Pro	Leu	Arg	Ala	Leu	Leu	Ser	Tyr	Leu	Leu	Pro	Leu	His	Cys
1				5					10					15	

Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20   25   30

Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35   40   45

Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50   55   60

Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65   70   75   80

Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85   90   95

Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100   105   110

Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115   120   125

Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130   135   140

Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145   150   155   160

Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165   170   175

Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180   185   190

Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195   200   205

Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210   215   220

Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225   230   235   240

Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245   250   255

Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260   265   270

Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275   280   285

Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290   295   300

Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305   310   315   320

Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325   330   335

Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340   345   350

His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355   360   365

Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370   375   380

Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385   390   395   400

Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala

51

```
                    405                      410                      415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420               425               430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435               440               445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450               455               460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465               470               475               480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485               490               495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500               505               510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515               520               525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530               535               540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545               550               555               560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565               570               575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580               585               590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595               600               605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
        610               615               620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625               630               635               640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                645               650               655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660               665               670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675               680               685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690               695               700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705               710               715               720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725               730               735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740               745               750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755               760               765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770               775               780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785               790               795               800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805               810               815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820               825               830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835               840               845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
```

52

```
        850              855              860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865              870              875              880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
             885              890              895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
         900              905              910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
         915              920              925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
         930              935              940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945              950              955              960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
             965              970              975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
         980              985              990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
         995              1000             1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
     1010             1015             1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025             1030             1035             1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
             1045             1050             1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
             1060             1065             1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
         1075             1080             1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
         1090             1095             1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105             1110             1115             1120
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
             1125             1130             1135
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
             1140             1145             1150
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
             1155             1160             1165
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
         1170             1175             1180
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185             1190             1195             1200
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
             1205             1210             1215
Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser
         1220             1225             1230
Glu Ser Asp
         1235


<210> 17
<211> 3699
<212> DNA
<213> homo sapiens


                         53
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<220>
<221> CDS
<222> (1)...(3699)

<400> 17

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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt      48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct      96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt     144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct     192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc     240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65                 70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg     288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt     336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta     384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc     432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga     480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc     528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg     576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc     624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205
```

54

```
cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210             215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430
```

55

```
ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc    1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag    1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc    1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac    1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500                 505                 510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag    1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515                 520                 525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg    1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                 535                 540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag    1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580                 585                 590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac    1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac    1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655
```

56

```
gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc      2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660             665             670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc      2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675             680             685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga      2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
            690             695             700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg      2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710             715             720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca      2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730             735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac      2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745             750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc      2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755             760             765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag      2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
            770             775             780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg      2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790             795             800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt      2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805             810             815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg      2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820             825             830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc      2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835             840             845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga      2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
            850             855             860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac      2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875             880
```

57

```
cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc   2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg   2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg   2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac   2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga   2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc   2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag   2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat   3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat   3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
            1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca   3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag   3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045                1050                1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag   3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060                1065                1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc   3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075                1080                1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca   3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
            1090                1095                1100
```

58

```
gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc    3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105             1110             1115             1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag    3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                1125             1130             1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca    3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
                1140             1145             1150

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct    3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
            1155             1160             1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc    3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
        1170             1175             1180

ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gag    3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185             1190             1195             1200

gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc acc agc ctc    3648
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
                1205             1210             1215

cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tat agt gag tct gat    3696
Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser Glu Ser Asp
            1220             1225             1230

tag                                                                3699
 *
```

```
<400> 18
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1           5                10               15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20               25               30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35               40               45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50               55               60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65               70               75               80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85               90               95
```

59

```
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
        100                     105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130             135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                     160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165                 170                     175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195             200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210             215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230                 235                     240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                 295                 300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                     320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325             330                 335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345                 350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355             360                 365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370             375                 380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390                 395                     400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405             410                 415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425                 430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435             440                 445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450             455                 460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465             470                 475                     480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
            485                 490                 495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500                 505                 510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515                 520                 525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                 535                 540
```

60

```
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                     550                 555                 560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580                 585                 590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                 615                 620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                645                 650                 655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                 665                 670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675                 680                 685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                 695                 700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                 760                 765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770                 775                 780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850                 855                 860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930                 935                 940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                980                 985                 990
```

61

```
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995                 1000                1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                1045                1050                1055
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
                1060                1065                1070
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075                1080                1085
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
        1090                1095                1100
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                1110                1115                1120
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                1125                1130                1135
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
                1140                1145                1150
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
            1155                1160                1165
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
        1170                1175                1180
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                1190                1195                1200
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
                1205                1210                1215
Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser Glu Ser Asp
                1220                1225                1230
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<220>
<221> CDS
<222> (1)...(3759)

<400> 19
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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1                   5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
```

62

```
gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65              70              75              80
```

```
agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85              90              95
```

```
tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100             105             110
```

```
ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115             120             125
```

```
gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
            130             135             140
```

β|
```
cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155             160
```

```
atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165             170             175
```

```
ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180             185             190
```

```
ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195             200             205
```

```
cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac   672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
            210             215             220
```

```
aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg   720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240
```

```
ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca   768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245             250             255
```

```
ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt   816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260             265             270
```

```
cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg   864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
```

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata   912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290   295   300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg   960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305   310   315   320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325   330   335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340   345   350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355   360   365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370   375   380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385   390   395   400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405   410   415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420   425   430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435   440   445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450   455   460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465   470   475   480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485   490   495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn

64

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515   520   525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530   535   540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545   550   555   560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565   570   575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580   585   590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595   600   605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
    610   615   620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625   630   635   640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645   650   655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660   665   670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675   680   685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690   695   700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705   710   715   720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro

```
gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac    2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745             750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc    2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755             760             765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag    2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770             775             780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790             795             800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805             810             815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820             825             830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835             840             845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850             855             860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875             880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885             890             895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900             905             910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915             920             925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930             935             940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
```

66

```
cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965                970                975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                985                990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                1000               1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
    1010               1015               1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025               1030               1035               1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045               1050               1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc    3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
            1060               1065               1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac    3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
        1075               1080               1085

cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac    3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
        1090               1095               1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct    3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105               1110               1115               1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct    3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
            1125               1130               1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca    3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
            1140               1145               1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc    3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
        1155               1160               1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct    3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
```

67

```
acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca   3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185               1190              1195              1200

gtc cct gag gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc   3648
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
                  1205              1210              1215

acc agc ctc cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tgc cat   3696
Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His
            1220              1225              1230

ccc act ggc acg ttt aca ctc tgt gta ctg ccc cgt gac tcc cag ctc   3744
Pro Thr Gly Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu
            1235              1240              1245

aga gga cac aca tag                                                3759
Arg Gly His Thr  *
    1250
```

βI

<210> 20
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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1                5                10              15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
          20              25              30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
          35              40              45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50              55              60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65              70              75              80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
              85              90              95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
              100             105             110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
          115             120             125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130             135             140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155             160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
              165             170             175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
              180             185             190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
          195             200             205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
```

```
              210                   215                   220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                   230                   235                   240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                  245                   250                   255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                  260                   265                   270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                  275                   280                   285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
                  290                   295                   300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                   310                   315                   320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                  325                   330                   335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                  340                   345                   350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                  355                   360                   365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                   375                   380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                   390                   395                   400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                  405                   410                   415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                  420                   425                   430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                  435                   440                   445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                   455                   460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                   470                   475                   480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                  485                   490                   495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                  500                   505                   510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                  515                   520                   525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                   535                   540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                   550                   555                   560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                  565                   570                   575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
                  580                   585                   590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
    595                   600                   605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                   615                   620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                   630                   635                   640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                  645                   650                   655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
```

β1

69

```
              660                    665                    670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
              675                    680                    685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
       690                    695                    700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                    710                    715                    720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                   725                    730                    735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
              740                    745                    750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
       755                    760                    765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
       770                    775                    780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                    790                    795                    800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                   805                    810                    815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
              820                    825                    830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
              835                    840                    845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
       850                    855                    860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                    870                    875                    880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                   885                    890                    895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                   900                    905                    910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
              915                    920                    925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
       930                    935                    940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                    950                    955                    960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                   965                    970                    975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                   980                    985                    990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
              995                    1000                   1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
       1010                   1015                   1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                   1030                   1035                   1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                   1045                   1050                   1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
              1060                   1065                   1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
       1075                   1080                   1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
       1090                   1095                   1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
```

                                    70

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      1105                        1110                        1115                        1120
      Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
                            1125                        1130                        1135
      Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
                        1140                        1145                        1150
      Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
                    1155                        1160                        1165
      Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
                1170                        1175                        1180
      Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
      1185                        1190                        1195                        1200
      Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
                            1205                        1210                        1215
      Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His
                    1220                        1225                        1230
      Pro Thr Gly Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu
                1235                        1240                        1245
      Arg Gly His Thr
          1250


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      <211> 3750
      <212> DNA
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      <222> (1)...(3750)

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      atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt      48
      Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
      1                   5                   10                  15

      gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct      96
      Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                      20                  25                  30

      gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt     144
      Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
              35                  40                  45

      cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct     192
      Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
          50                  55                  60

      gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc     240
      Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
      65                  70                  75                  80

      agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg     288
      Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                      85                  90                  95

      tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt     336
```

71

```
                Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
                        100             105                 110

                ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
                Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
                        115             120                 125

                gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
                Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
                        130             135                 140

                cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
                Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
                145                 150                 155                 160

                atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
                Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                                165                 170                 175

                ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
                Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                            180                 185                 190

                ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
                Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
                        195                 200                 205

                cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
                Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
                        210                 215                 220

                aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
                Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
                225                 230                 235                 240

                ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
                Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                                245                 250                 255

                ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
                Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                                260                 265                 270

                cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
                Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                            275                 280                 285

                aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
                Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
                        290                 295                 300

                aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
                Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
                305                 310                 315                 320

                agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008

                                         72
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```
            Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                         325                 330                 335

            cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac     1056
            Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                         340                 345                 350

            cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg     1104
            His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                         355                 360                 365

            tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc     1152
            Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
                 370                 375                 380

            aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc     1200
            Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
            385                 390                 395                 400

            ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca     1248
            Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                         405                 410                 415

            gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc     1296
            Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                         420                 425                 430

            ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc     1344
            Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                         435                 440                 445

            tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc     1392
            Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
                 450                 455                 460

            tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag     1440
            Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
            465                 470                 475                 480

            cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc     1488
            Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                         485                 490                 495

            agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac     1536
            Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                         500                 505                 510

            cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag     1584
            Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                         515                 520                 525

            tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg     1632
            Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
                 530                 535                 540

            ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag     1680
```

```
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                550                555                560


ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                570                575


cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
                580                585                590


ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595                600                605


acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610                615                620


tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                630                635                640


gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                650                655


gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                665                670


tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                680                685


ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690                695                700


gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                710                715                720


ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                730                735


gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                745                750


cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                760                765


aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
```

74

```
        Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
            770                 775                 780

        tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
        Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
        785                 790                 795                 800

        ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
        Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                        805                 810                 815

        ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
        Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                        820                 825                 830

        ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
        Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
                        835                 840                 845

        tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
        Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
            850                 855                 860
```

B1

```
        gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
        Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
        865                 870                 875                 880

        cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
        His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                        885                 890                 895

        atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
        Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                        900                 905                 910

        acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
        Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
                915                 920                 925

        cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
        Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930                 935                 940

        aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
        Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
        945                 950                 955                 960

        cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
        Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                        965                 970                 975

        tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
        Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                        980                 985                 990

        gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024

                                75
```

```
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995             1000             1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010             1015             1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025             1030             1035             1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045             1050             1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag    3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060             1065             1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc    3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075             1080             1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca    3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
            1090             1095             1100

gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc    3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105             1110             1115             1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag    3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
            1125             1130             1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca    3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
            1140             1145             1150

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct    3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
            1155             1160             1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc    3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
            1170             1175             1180

ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gag    3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185             1190             1195             1200

gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc acc agc ctc    3648
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
            1205             1210             1215

cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tgc cat ccc act ggc    3696
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            Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His Pro Thr Gly
                     1220                1225            1230

acg ttt aca ctc tgt gta ctg ccc cgt gac tcc cag ctc aga gga cac    3744
Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu Arg Gly His
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aca tag                                                             3750
Thr  *
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Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
             20                  25              30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
         35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
     50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                 85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                 295                 300
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77

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Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315                 320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325             330             335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355             360             365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370             375             380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405             410             415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435             440             445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450             455             460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465             470             475             480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
            485             490             495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
        500             505             510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515             520             525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530             535             540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545             550             555             560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
            565             570             575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
        580             585             590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595             600             605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610             615             620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625             630             635             640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
            645             650             655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660             665             670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675             680             685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690             695             700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710             715             720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730             735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745             750
```

78

```
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                 760             765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770             775             780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805                 810                 815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
        850             855             860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870             875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885                 890                 895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900             905             910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915             920             925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
        930             935             940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950             955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965             970             975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980             985             990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995             1000            1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
        1010            1015            1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
            1045            1050            1055
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060            1065            1070
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075            1080            1085
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
        1090            1095            1100
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                1110            1115                1120
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
            1125            1130            1135
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
            1140            1145            1150
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
        1155            1160            1165
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
        1170            1175            1180
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                1190            1195                1200
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Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
            1205   1210   1215
Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His Pro Thr Gly
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Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu Arg Gly His
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1               5                   10                  15


ctg gcc gag atg ggg agc cca gac gcc gcg gcg gcc gtg cgc aag gac      96
Leu Ala Glu Met Gly Ser Pro Asp Ala Ala Ala Ala Val Arg Lys Asp
                20                  25                  30


agg ctg cac ccg agg caa gtg aaa tta tta gag acc ctg agc gaa tac     144
Arg Leu His Pro Arg Gln Val Lys Leu Leu Glu Thr Leu Ser Glu Tyr
            35                  40                  45


gaa atc gtg tct ccc atc cga gtg aac gct ctc gga gaa ccc ttt ccc     192
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81

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            Glu Ile Val Ser Pro Ile Arg Val Asn Ala Leu Gly Glu Pro Phe Pro
                 50              55                  60

            acg aac gtc cac ttc aaa aga acg cga cgg agc att aac tct gcc act    240
            Thr Asn Val His Phe Lys Arg Thr Arg Arg Ser Ile Asn Ser Ala Thr
             65              70                  75                  80

            gac ccc tgg cct gcc ttc gcc tcc tcc tct tcc tcc tct acc tcc wcc    288
            Asp Pro Trp Pro Ala Phe Ala Ser Ser Ser Ser Ser Ser Thr Ser Xaa
                             85                  90                  95

            cag gcg cat tac cgc ctc tct gcc ttc ggc cag cag ttt cta ttt aat    336
            Gln Ala His Tyr Arg Leu Ser Ala Phe Gly Gln Gln Phe Leu Phe Asn
                         100                 105                 110

            ctc acc gcc aat gcc gga ttt atc gct cca ctg ttc·act gtc acc ctc    384
            Leu Thr Ala Asn Ala Gly Phe Ile Ala Pro Leu Phe Thr Val Thr Leu
                         115                 120                 125

            ctc ggg acg ccc ggg gtg aat cag acc aag ttt tat tcc gaa gag gaa    432
            Leu Gly Thr Pro Gly Val Asn Gln Thr Lys Phe Tyr Ser Glu Glu Glu
                     130             135                 140

            gcg gaa ctc aag cac tgt ttc tac aaa ggc tat gtc aat acc aac tcc    480
            Ala Glu Leu Lys His Cys Phe Tyr Lys Gly Tyr Val Asn Thr Asn Ser
            145             150                 155                 160

            gag cac acg gcc gtc atc agc ctc tgc tca gga atg ctg ggc aca ttc    528
            Glu His Thr Ala Val Ile Ser Leu Cys Ser Gly Met Leu Gly Thr Phe
                             165                 170                 175

            cgg tct cat gat ggg gat tat ttt att gaa cca cta cag tct atg gat    576
            Arg Ser His Asp Gly Asp Tyr Phe Ile Glu Pro Leu Gln Ser Met Asp
                         180                 185                 190

            gaa caa gaa gat gaa gag gaa caa aac aaa ccc cac atc att tat agg    624
            Glu Gln Glu Asp Glu Glu Glu Gln Asn Lys Pro His Ile Ile Tyr Arg
                     195                 200                 205

            cgc agc gcc ccc cag aga gag ccc tca aca gga agg cat gca tgt gac    672
            Arg Ser Ala Pro Gln Arg Glu Pro Ser Thr Gly Arg His Ala Cys Asp
                210             215                 220

            acc tca gaa cac aaa aat agg cac agt aaa gac aag aag aaa acc aga    720
            Thr Ser Glu His Lys Asn Arg His Ser Lys Asp Lys Lys Lys Thr Arg
            225             230                 235                 240

            gca aga aaa tgg gga gaa agg att aac ctg gct ggt gac gta gca gca    768
            Ala Arg Lys Trp Gly Glu Arg Ile Asn Leu Ala Gly Asp Val Ala Ala
                             245                 250                 255

            tta aac agc ggc tta gca aca gag gca ttt tct gct tat ggt aat aag    816
            Leu Asn Ser Gly Leu Ala Thr Glu Ala Phe Ser Ala Tyr Gly Asn Lys
                         260                 265                 270

            acg gac aac aca aga gaa aag agg acc cac aga agg aca aaa cgt ttt    864
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82

```
          Thr Asp Asn Thr Arg Glu Lys Arg Thr His Arg Arg Thr Lys Arg Phe
              275                 280                 285

          tta tcc tat cca cgg ttt gta gaa gtc ttg gtg gtg gca gac aac aga   912
          Leu Ser Tyr Pro Arg Phe Val Glu Val Leu Val Val Ala Asp Asn Arg
              290                 295                 300

          atg gtt tca tac cat gga gaa aac ctt caa cac tat att tta act tta   960
          Met Val Ser Tyr His Gly Glu Asn Leu Gln His Tyr Ile Leu Thr Leu
          305                 310                 315                 320

          atg tca att gat ggg cct tcc ata tct ttt aat gct cag aca aca tta  1008
          Met Ser Ile Asp Gly Pro Ser Ile Ser Phe Asn Ala Gln Thr Thr Leu
                          325                 330                 335

          aaa aac ttt tgc cag tgg cag cat tcg aag aac agt cca ggt gga atc  1056
          Lys Asn Phe Cys Gln Trp Gln His Ser Lys Asn Ser Pro Gly Gly Ile
                          340                 345                 350

          cat cat gat act gct gtt ctc tta aca aga cag gat atc tgc aga gct  1104
          His His Asp Thr Ala Val Leu Leu Thr Arg Gln Asp Ile Cys Arg Ala
                      355                 360                 365

          cac gac aaa tgt gat acc tta ggc ctg gct gaa ctg gga acc att tgt  1152
          His Asp Lys Cys Asp Thr Leu Gly Leu Ala Glu Leu Gly Thr Ile Cys
              370                 375                 380

          gat ccc tat aga agc tgt tct att agt gaa gat agt gga ttg agt aca  1200
          Asp Pro Tyr Arg Ser Cys Ser Ile Ser Glu Asp Ser Gly Leu Ser Thr
          385                 390                 395                 400

          gct ttt acg atc gcc cat gag ctg ggc cat gtg ttt aac atg cct cat  1248
          Ala Phe Thr Ile Ala His Glu Leu Gly His Val Phe Asn Met Pro His
                          405                 410                 415

          gat gac aac aac aaa tgt aaa gaa gaa gga gtt aag agt ccc cag cat  1296
          Asp Asp Asn Asn Lys Cys Lys Glu Glu Gly Val Lys Ser Pro Gln His
                          420                 425                 430

          gtc atg gct cca aca ctg aac ttc tac acc aac ccc tgg atg tgg tca  1344
          Val Met Ala Pro Thr Leu Asn Phe Tyr Thr Asn Pro Trp Met Trp Ser
                      435                 440                 445

          aag tgt agt cga aaa tat atc act gag ttt tta gac act ggt tat ggc  1392
          Lys Cys Ser Arg Lys Tyr Ile Thr Glu Phe Leu Asp Thr Gly Tyr Gly
              450                 455                 460

          gag tgt ttg ctt aac gaa cct gaa tcc aga ccc tac cct ttg cct gtc  1440
          Glu Cys Leu Leu Asn Glu Pro Glu Ser Arg Pro Tyr Pro Leu Pro Val
          465                 470                 475                 480

          caa ctg cca ggc atc ctt tac aac gtg aat aaa caa tgt gaa ttg att  1488
          Gln Leu Pro Gly Ile Leu Tyr Asn Val Asn Lys Gln Cys Glu Leu Ile
                          485                 490                 495

          ttt gga cca ggt tct cag gtg tgc cca tat atg atg cag tgc aga cgg  1536
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83

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Phe Gly Pro Gly Ser Gln Val Cys Pro Tyr Met Met Gln Cys Arg Arg
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Leu Trp Cys Asn Asn Val Asn Gly Val His Lys Gly Cys Arg Thr Gln
        515                 520                 525

cac aca ccc tgg gcc gat ggg acg gag tgc gag cct gga aag cac tgc   1632
His Thr Pro Trp Ala Asp Gly Thr Glu Cys Glu Pro Gly Lys His Cys
        530                 535                 540

aag tat gga ttt tgt gtt ccc aaa gaa atg gat gtc ccc gtg aca gat   1680
Lys Tyr Gly Phe Cys Val Pro Lys Glu Met Asp Val Pro Val Thr Asp
545                 550                 555                 560

gga tcc tgg gga agt tgg agt ccc ttt gga acc tgc tcc aga aca tgt   1728
Gly Ser Trp Gly Ser Trp Ser Pro Phe Gly Thr Cys Ser Arg Thr Cys
                565                 570                 575

gga ggg ggc atc aaa aca gcc att cga gag tgc aac aga cca gaa cca   1776
Gly Gly Gly Ile Lys Thr Ala Ile Arg Glu Cys Asn Arg Pro Glu Pro
                580                 585                 590

aaa aat ggt gga aaa tac tgt gta gga cgt aga atg aaa ttt aag tcc   1824
Lys Asn Gly Gly Lys Tyr Cys Val Gly Arg Arg Met Lys Phe Lys Ser
            595                 600                 605

tgc aac acg gag cca tgt ctc aag cag aag cga gac ttc cga gat gaa   1872
Cys Asn Thr Glu Pro Cys Leu Lys Gln Lys Arg Asp Phe Arg Asp Glu
        610                 615                 620

cag tgt gct cac ttt gac ggg aag cat ttt aac atc aac ggt ctg ctt   1920
Gln Cys Ala His Phe Asp Gly Lys His Phe Asn Ile Asn Gly Leu Leu
625                 630                 635                 640

ccc aat gtg cgc tgg gtc cct aaa tac agt gga att ctg atg aag gac   1968
Pro Asn Val Arg Trp Val Pro Lys Tyr Ser Gly Ile Leu Met Lys Asp
                645                 650                 655

cgg tgc aag ttg ttc tgc aga gtg gca ggg aac aca gcc tac tat cag   2016
Arg Cys Lys Leu Phe Cys Arg Val Ala Gly Asn Thr Ala Tyr Tyr Gln
            660                 665                 670

ctt cga gac aga gtg ata gat gga act cct tgt ggc cag gac aca aat   2064
Leu Arg Asp Arg Val Ile Asp Gly Thr Pro Cys Gly Gln Asp Thr Asn
        675                 680                 685

gat atc tgt gtc cag ggc ctt tgc cgg caa gct gga tgc gat cat gtt   2112
Asp Ile Cys Val Gln Gly Leu Cys Arg Gln Ala Gly Cys Asp His Val
        690                 695                 700

tta aac tca aaa gcc cgg aga gat aaa tgt ggg gtt tgt ggt ggc gat   2160
Leu Asn Ser Lys Ala Arg Arg Asp Lys Cys Gly Val Cys Gly Gly Asp
705                 710                 715                 720

aat tct tca tgc aaa aca gtg gca gga aca ttt aat aca gta cat tat   2208
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84

```
            Asn Ser Ser Cys Lys Thr Val Ala Gly Thr Phe Asn Thr Val His Tyr
                          725             730             735

        ggt tac aat act gtg gtc cga att cca gct ggt gct acc aat att gat      2256
        Gly Tyr Asn Thr Val Val Arg Ile Pro Ala Gly Ala Thr Asn Ile Asp
                    740             745             750

        gtg cgg cag cac agt ttc tca ggg gaa aca gac gat gac aac tac tta      2304
        Val Arg Gln His Ser Phe Ser Gly Glu Thr Asp Asp Asp Asn Tyr Leu
                    755             760             765

        gct tta tca agc agt aaa ggt gaa ttc ttg cta aat gga aac ttt gtt      2352
        Ala Leu Ser Ser Ser Lys Gly Glu Phe Leu Leu Asn Gly Asn Phe Val
                    770             775             780

        gtc aca atg gcc aaa agg gaa att cgc att ggg aat gct gtg gta gag      2400
        Val Thr Met Ala Lys Arg Glu Ile Arg Ile Gly Asn Ala Val Val Glu
        785             790             795             800

        tac agt ggg tcc gag act gcc gta gaa aga att aac tca aca gat cgc      2448
        Tyr Ser Gly Ser Glu Thr Ala Val Glu Arg Ile Asn Ser Thr Asp Arg
                    805             810             815

        att gag caa gaa ctt ttg ctt cag gtt ttg tcg gtg gga aag ttg tac      2496
        Ile Glu Gln Glu Leu Leu Leu Gln Val Leu Ser Val Gly Lys Leu Tyr
                    820             825             830

        aac ccc gat gta cgc tat tct ttc aat att cca att gaa gat aaa cct      2544
        Asn Pro Asp Val Arg Tyr Ser Phe Asn Ile Pro Ile Glu Asp Lys Pro
                    835             840             845

        cag cag ttt tac tgg aac agt cat ggg cca tgg caa gca tgc agt aaa      2592
        Gln Gln Phe Tyr Trp Asn Ser His Gly Pro Trp Gln Ala Cys Ser Lys
                    850             855             860

        ccc tgc caa ggg gaa cgg aaa cga aaa ctt gtt tgc acc agg gaa tct      2640
        Pro Cys Gln Gly Glu Arg Lys Arg Lys Leu Val Cys Thr Arg Glu Ser
        865                     870             875             880

        gat cag ctt act gtt tct gat caa aga tgc gat cgg ctg ccc cag cct      2688
        Asp Gln Leu Thr Val Ser Asp Gln Arg Cys Asp Arg Leu Pro Gln Pro
                    885             890             895

        gga cac att act gaa ccc tgt ggt aca gac tgt gac ctg agg tgg cat      2736
        Gly His Ile Thr Glu Pro Cys Gly Thr Asp Cys Asp Leu Arg Trp His
                    900             905             910

        gtt gcc agc agg agt gaa tgt agt gcc cag tgt ggc ttg ggt tac cgc      2784
        Val Ala Ser Arg Ser Glu Cys Ser Ala Gln Cys Gly Leu Gly Tyr Arg
                    915             920             925

        aca ttg gac atc tac tgt gcc aaa tat agc agg ctg gat ggg aag act      2832
        Thr Leu Asp Ile Tyr Cys Ala Lys Tyr Ser Arg Leu Asp Gly Lys Thr
                    930             935             940

        gag aag gtt gat gat ggt ttt tgc agc agc cat ccc aaa cca agc aac      2880
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85

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Glu Lys Val Asp Asp Gly Phe Cys Ser Ser His Pro Lys Pro Ser Asn
945                 950             955             960

cgt gaa aaa tgc tca ggg gaa tgt aac acg ggt ggc tgg cgc tat tct   2928
Arg Glu Lys Cys Ser Gly Glu Cys Asn Thr Gly Gly Trp Arg Tyr Ser
                965             970             975

gcc tgg act gaa tgt tca aaa agc tgt gac ggt ggg acc cag agg aga   2976
Ala Trp Thr Glu Cys Ser Lys Ser Cys Asp Gly Gly Thr Gln Arg Arg
                980             985             990

agg gct att tgt gtc aat acc cga aat gat gta ctg gat gac agc aaa   3024
Arg Ala Ile Cys Val Asn Thr Arg Asn Asp Val Leu Asp Asp Ser Lys
            995             1000            1005

tgc aca cat caa gag aaa gtt acc att cag agg tgc agt gag ttc cct   3072
Cys Thr His Gln Glu Lys Val Thr Ile Gln Arg Cys Ser Glu Phe Pro
        1010            1015            1020

tgt cca cag tgg aaa tct gga gac tgg tca gag tgc ttg gtc acc tgt   3120
Cys Pro Gln Trp Lys Ser Gly Asp Trp Ser Glu Cys Leu Val Thr Cys
1025            1030            1035            1040

gga aaa ggg cat aag cac cgc cag gtc tgg tgt cag ttt ggt gaa gat   3168
Gly Lys Gly His Lys His Arg Gln Val Trp Cys Gln Phe Gly Glu Asp
                1045            1050            1055

cga tta aat gat aga atg tgt gac cct gag acc aag cca aca tct atg   3216
Arg Leu Asn Asp Arg Met Cys Asp Pro Glu Thr Lys Pro Thr Ser Met
            1060            1065            1070

cag act tgt cag cag ccg gaa tgt gca tcc tgg cag gcg ggt ccc tgg   3264
Gln Thr Cys Gln Gln Pro Glu Cys Ala Ser Trp Gln Ala Gly Pro Trp
        1075            1080            1085

gga cag tgc agt gtc act tgt gga cag gga tac cag cta aga gca gtg   3312
Gly Gln Cys Ser Val Thr Cys Gly Gln Gly Tyr Gln Leu Arg Ala Val
    1090            1095            1100

aaa tgc atc att ggg act tat atg tca gtg gta gat gac aat gac tgt   3360
Lys Cys Ile Ile Gly Thr Tyr Met Ser Val Val Asp Asp Asn Asp Cys
1105            1110            1115            1120

aat gca gca act aga cca act gat acc cag gac tgt gaa tta cca tca   3408
Asn Ala Ala Thr Arg Pro Thr Asp Thr Gln Asp Cys Glu Leu Pro Ser
            1125            1130            1135

tgt cat cct ccc cca gct gcc ccg gaa acg agg aga agc aca tac agt   3456
Cys His Pro Pro Pro Ala Ala Pro Glu Thr Arg Arg Ser Thr Tyr Ser
        1140            1145            1150

gca cca aga acc cag tgg cga ttt ggg tct tgg acc cca tgc tca gcc   3504
Ala Pro Arg Thr Gln Trp Arg Phe Gly Ser Trp Thr Pro Cys Ser Ala
        1155            1160            1165

act tgt ggg aaa ggt acc cgg atg aga tac gtc agc tgc cga gat gag   3552
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86

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    Thr Cys Gly Lys Gly Thr Arg Met Arg Tyr Val Ser Cys Arg Asp Glu
        1170                1175                1180

    aat ggc tct gtg gct gac gag agt gcc tgt gct acc ctg cct aga cca    3600
    Asn Gly Ser Val Ala Asp Glu Ser Ala Cys Ala Thr Leu Pro Arg Pro
    1185                1190                1195                1200

    gtg gca aag gaa gaa tgt tct gtg aca ccc tgt ggg caa tgg aag gcc    3648
    Val Ala Lys Glu Glu Cys Ser Val Thr Pro Cys Gly Gln Trp Lys Ala
                    1205                1210                1215

    ttg gac tgg agc tct tgc tct gtg acc tgt ggg caa ggt agg gca acc    3696
    Leu Asp Trp Ser Ser Cys Ser Val Thr Cys Gly Gln Gly Arg Ala Thr
                    1220                1225                1230

    cgg caa gtg atg tgt gtc aac tac agt gac cac gtg aty gat cgg agt    3744
    Arg Gln Val Met Cys Val Asn Tyr Ser Asp His Val Xaa Asp Arg Ser
                1235                1240                1245

    gag tgt gac cag gat tat atc cca gaa act gac cag gac tgt tcc atg    3792
    Glu Cys Asp Gln Asp Tyr Ile Pro Glu Thr Asp Gln Asp Cys Ser Met
                1250                1255                1260

    tca cca tgc cct caa agg acc cca gac agt ggc tta gct cag cac ccc    3840
    Ser Pro Cys Pro Gln Arg Thr Pro Asp Ser Gly Leu Ala Gln His Pro
    1265                1270                1275                1280

    ttc caa aat gag gac tat cgt ccc cgg agc gcc agc ccc agc cgc acc    3888
    Phe Gln Asn Glu Asp Tyr Arg Pro Arg Ser Ala Ser Pro Ser Arg Thr
                    1285                1290                1295

    cat gtg ctc ggt gga aac cag tgg aga act ggc ccc tgg gga gca tgt    3936
    His Val Leu Gly Gly Asn Gln Trp Arg Thr Gly Pro Trp Gly Ala Cys
                    1300                1305                1310

    tcc agt acc tgt gct ggc gga tcc cag cgg cgt gtt gtt gta tgt cag    3984
    Ser Ser Thr Cys Ala Gly Gly Ser Gln Arg Arg Val Val Val Cys Gln
                1315                1320                1325

    gat gaa aat gga tac acc gca aac gac tgt gtg gag aga ata aaa cct    4032
    Asp Glu Asn Gly Tyr Thr Ala Asn Asp Cys Val Glu Arg Ile Lys Pro
            1330                1335                1340

    gat gag caa aga gcc tgt gaa tcc ggc cct tgt cct cag tgg gct tat    4080
    Asp Glu Gln Arg Ala Cys Glu Ser Gly Pro Cys Pro Gln Trp Ala Tyr
    1345                1350                1355                1360

    ggc aac tgg gga gag tgc act aag ctg tgt ggt gga ggc ata aga aca    4128
    Gly Asn Trp Gly Glu Cys Thr Lys Leu Cys Gly Gly Gly Ile Arg Thr
                    1365                1370                1375

    aga ctg gtg gtc tgt cag cgg tcc aac ggt gaa cgg ttt cca gat ttg    4176
    Arg Leu Val Val Cys Gln Arg Ser Asn Gly Glu Arg Phe Pro Asp Leu
                1380                1385                1390

    agc tgt gaa att ctt gat aaa cct ccc gat cgt gag cag tgt aac aca    4224
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87

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    Ser Cys Glu Ile Leu Asp Lys Pro Pro Asp Arg Glu Gln Cys Asn Thr
        1395                1400            1405

cat gct tgt cca cac gac gct gca tgg agt act ggc cct tgg agc tcg   4272
His Ala Cys Pro His Asp Ala Ala Trp Ser Thr Gly Pro Trp Ser Ser
    1410            1415            1420

tgt tct gtc tct tgt ggt cga ggg cat aaa caa cga aat gtt tac tgc   4320
Cys Ser Val Ser Cys Gly Arg Gly His Lys Gln Arg Asn Val Tyr Cys
1425            1430            1435            1440

atg gca aaa gat gga agc cat tta gaa agt gat tac tgt aag cac ctg   4368
Met Ala Lys Asp Gly Ser His Leu Glu Ser Asp Tyr Cys Lys His Leu
            1445            1450            1455

gct aag cca cat ggg cac aga aag tgc cga gga gga aga tgc ccc aaa   4416
Ala Lys Pro His Gly His Arg Lys Cys Arg Gly Gly Arg Cys Pro Lys
            1460            1465            1470

tgg aaa gct ggc gct tgg agt cag tgc tct gtg tcc tgt ggc cga ggc   4464
Trp Lys Ala Gly Ala Trp Ser Gln Cys Ser Val Ser Cys Gly Arg Gly
            1475            1480            1485

gta cag cag agg cat gtg ggc tgt cag atc gga aca cac aaa ata gcc   4512
Val Gln Gln Arg His Val Gly Cys Gln Ile Gly Thr His Lys Ile Ala
    1490            1495            1500

aga gag acc gag tgc aac cca tac acc aga ccg gag tcg gaa cgc gac   4560
Arg Glu Thr Glu Cys Asn Pro Tyr Thr Arg Pro Glu Ser Glu Arg Asp
1505            1510            1515            1520

tgc caa ggc cca cgg tgt ccc ctc tac act tgg agg gca gag gaa tgg   4608
Cys Gln Gly Pro Arg Cys Pro Leu Tyr Thr Trp Arg Ala Glu Glu Trp
            1525            1530            1535

caa gaa tgc acc aag acc tgc ggc gaa ggc tcc agg tac cgc aag gtg   4656
Gln Glu Cys Thr Lys Thr Cys Gly Glu Gly Ser Arg Tyr Arg Lys Val
            1540            1545            1550

gtg tgt gtg gat gac aac aaa aac gag gtg cat ggg gca cgc tgt gac   4704
Val Cys Val Asp Asp Asn Lys Asn Glu Val His Gly Ala Arg Cys Asp
            1555            1560            1565

gtg agc aag cgg ccg gtg gac cgt gaa agc tgt agt ttg caa ccc tgc   4752
Val Ser Lys Arg Pro Val Asp Arg Glu Ser Cys Ser Leu Gln Pro Cys
    1570            1575            1580

gag tat gtc tgg atc aca gga gaa tgg tca gag tgc tca gtg acc tgt   4800
Glu Tyr Val Trp Ile Thr Gly Glu Trp Ser Glu Cys Ser Val Thr Cys
1585            1590            1595            1600

gga aaa ggc tac aaa caa agg ctt gtc tcg tgc agc gag att tac acc   4848
Gly Lys Gly Tyr Lys Gln Arg Leu Val Ser Cys Ser Glu Ile Tyr Thr
            1605            1610            1615

ggg aag gag aat tat gaa tac agc tac caa acc acc atc aac tgc cca   4896
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                Gly Lys Glu Asn Tyr Glu Tyr Ser Tyr Gln Thr Thr Ile Asn Cys Pro
                        1620                1625                1630

                ggc acg cag ccc ccc agt gtt cac ccc tgt tac ctg agg gac tgc cct   4944
                Gly Thr Gln Pro Pro Ser Val His Pro Cys Tyr Leu Arg Asp Cys Pro
                        1635                1640                1645

                gtc tcg gcc acc tgg aga gtt ggc aac tgg ggg agc tgc tca gtg tct   4992
                Val Ser Ala Thr Trp Arg Val Gly Asn Trp Gly Ser Cys Ser Val Ser
                        1650                1655                1660

                tgt ggt gtt gga gtg atg cag aga tct gtg caa tgt tta acc aat gag   5040
                Cys Gly Val Gly Val Met Gln Arg Ser Val Gln Cys Leu Thr Asn Glu
                1665                1670                1675                1680

                gac caa ccc agc cac tta tgc cac act gat ctg aag cca gaa gaa cga   5088
                Asp Gln Pro Ser His Leu Cys His Thr Asp Leu Lys Pro Glu Glu Arg
                                1685                1690                1695

                aaa acc tgc cgt aat gtc tat aac tgt gag tta ccc cag aat tgc aag   5136
                Lys Thr Cys Arg Asn Val Tyr Asn Cys Glu Leu Pro Gln Asn Cys Lys
                                1700                1705                1710

                gag gta aaa aga ctt aaa ggt gcc agt gaa gat ggt gaa tat ttc ctg   5184
                Glu Val Lys Arg Leu Lys Gly Ala Ser Glu Asp Gly Glu Tyr Phe Leu
                        1715                1720                1725

                atg att aga gga aag ctt ctg aag ata ttc tgt gcg ggg atg cac tct   5232
                Met Ile Arg Gly Lys Leu Leu Lys Ile Phe Cys Ala Gly Met His Ser
                        1730                1735                1740

                gac cac ccc aaa gag tac gtg aca ctg gtg cat gga gac tct gag aat   5280
                Asp His Pro Lys Glu Tyr Val Thr Leu Val His Gly Asp Ser Glu Asn
                1745                1750                1755                1760

                ttc tcc gag gtt tat ggg cac agg tta cac aac cca aca gaa tgt ccc   5328
                Phe Ser Glu Val Tyr Gly His Arg Leu His Asn Pro Thr Glu Cys Pro
                                1765                1770                1775

                tat aac ggg agc cgg cgc gat gac tgc caa tgt cgg aag gat tac acg   5376
                Tyr Asn Gly Ser Arg Arg Asp Asp Cys Gln Cys Arg Lys Asp Tyr Thr
                        1780                1785                1790

                gcc gct ggg ttt tcc agt ttt cag aaa atc aga ata gac ctg acc agc   5424
                Ala Ala Gly Phe Ser Ser Phe Gln Lys Ile Arg Ile Asp Leu Thr Ser
                        1795                1800                1805

                atg cag ata atc acc act gac tta cag ttt gca agg aca agc gaa gga   5472
                Met Gln Ile Ile Thr Thr Asp Leu Gln Phe Ala Arg Thr Ser Glu Gly
                        1810                1815                1820

                cat ccc gtc cct ttt gcc aca gcc ggg gat tgc tac agc gct gcc aag   5520
                His Pro Val Pro Phe Ala Thr Ala Gly Asp Cys Tyr Ser Ala Ala Lys
                1825                1830                1835                1840

                tgc cca cag ggt cgt ttt agc atc aac ctt tat gga acc ggc ttg tct   5568
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89

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        Cys Pro Gln Gly Arg Phe Ser Ile Asn Leu Tyr Gly Thr Gly Leu Ser
                      1845                    1850                    1855

        tta act gaa tct gcc aga tgg ata tca caa ggg aat tat gct gtc tct    5616
        Leu Thr Glu Ser Ala Arg Trp Ile Ser Gln Gly Asn Tyr Ala Val Ser
                      1860                    1865                    1870

        gac atc aag aag tcg ccg gat ggt acc cga gtc gta ggg aaa tgc ggt    5664
        Asp Ile Lys Lys Ser Pro Asp Gly Thr Arg Val Val Gly Lys Cys Gly
                      1875                    1880                    1885

        ggt tac tgt gga aaa tgc act cca tcc tct ggt act ggc ctg gag gtg    5712
        Gly Tyr Cys Gly Lys Cys Thr Pro Ser Ser Gly Thr Gly Leu Glu Val
                      1890                    1895                    1900

        cga gtt tta tag                                                    5724
        Arg Val Leu  *
        1905
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<210> 25
<211> 1907
<212> PRT
<213> homo sapiens

<400> 25

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Met Gln Phe Val Ser Trp Ala Thr Leu Leu Thr Leu Leu Val Arg Asp
1                   5                   10                  15
Leu Ala Glu Met Gly Ser Pro Asp Ala Ala Ala Ala Val Arg Lys Asp
              20                  25                  30
Arg Leu His Pro Arg Gln Val Lys Leu Leu Glu Thr Leu Ser Glu Tyr
          35                  40                  45
Glu Ile Val Ser Pro Ile Arg Val Asn Ala Leu Gly Glu Pro Phe Pro
      50                  55                  60
Thr Asn Val His Phe Lys Arg Thr Arg Arg Ser Ile Asn Ser Ala Thr
65                  70                  75                  80
Asp Pro Trp Pro Ala Phe Ala Ser Ser Ser Ser Ser Ser Thr Ser Ser
              85                  90                  95
Gln Ala His Tyr Arg Leu Ser Ala Phe Gly Gln Gln Phe Leu Phe Asn
              100                 105                 110
Leu Thr Ala Asn Ala Gly Phe Ile Ala Pro Leu Phe Thr Val Thr Leu
          115                 120                 125
Leu Gly Thr Pro Gly Val Asn Gln Thr Lys Phe Tyr Ser Glu Glu Glu
      130                 135                 140
Ala Glu Leu Lys His Cys Phe Tyr Lys Gly Tyr Val Asn Thr Asn Ser
145                 150                 155                 160
Glu His Thr Ala Val Ile Ser Leu Cys Ser Gly Met Leu Gly Thr Phe
              165                 170                 175
Arg Ser His Asp Gly Asp Tyr Phe Ile Glu Pro Leu Gln Ser Met Asp
              180                 185                 190
Glu Gln Glu Asp Glu Glu Glu Gln Asn Lys Pro His Ile Ile Tyr Arg
          195                 200                 205
Arg Ser Ala Pro Gln Arg Glu Pro Ser Thr Gly Arg His Ala Cys Asp
      210                 215                 220
Thr Ser Glu His Lys Asn Arg His Ser Lys Asp Lys Lys Lys Thr Arg
225                 230                 235                 240
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90

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Ala Arg Lys Trp Gly Glu Arg Ile Asn Leu Ala Gly Asp Val Ala Ala
            245                 250                 255
Leu Asn Ser Gly Leu Ala Thr Glu Ala Phe Ser Ala Tyr Gly Asn Lys
            260                 265                 270
Thr Asp Asn Thr Arg Glu Lys Arg Thr His Arg Arg Thr Lys Arg Phe
            275                 280                 285
Leu Ser Tyr Pro Arg Phe Val Glu Val Leu Val Val Ala Asp Asn Arg
        290                 295                 300
Met Val Ser Tyr His Gly Glu Asn Leu Gln His Tyr Ile Leu Thr Leu
305                 310                 315                 320
Met Ser Ile Asp Gly Pro Ser Ile Ser Phe Asn Ala Gln Thr Thr Leu
                325                 330                 335
Lys Asn Phe Cys Gln Trp Gln His Ser Lys Asn Ser Pro Gly Gly Ile
            340                 345                 350
His His Asp Thr Ala Val Leu Leu Thr Arg Gln Asp Ile Cys Arg Ala
            355                 360                 365
His Asp Lys Cys Asp Thr Leu Gly Leu Ala Glu Leu Gly Thr Ile Cys
    370                 375                 380
Asp Pro Tyr Arg Ser Cys Ser Ile Ser Glu Asp Ser Gly Leu Ser Thr
385                 390                 395                 400
Ala Phe Thr Ile Ala His Glu Leu Gly His Val Phe Asn Met Pro His
                405                 410                 415
Asp Asp Asn Asn Lys Cys Lys Glu Glu Gly Val Lys Ser Pro Gln His
            420                 425                 430
Val Met Ala Pro Thr Leu Asn Phe Tyr Thr Asn Pro Trp Met Trp Ser
            435                 440                 445
Lys Cys Ser Arg Lys Tyr Ile Thr Glu Phe Leu Asp Thr Gly Tyr Gly
    450                 455                 460
Glu Cys Leu Leu Asn Glu Pro Glu Ser Arg Pro Tyr Pro Leu Pro Val
465                 470                 475                 480
Gln Leu Pro Gly Ile Leu Tyr Asn Val Asn Lys Gln Cys Glu Leu Ile
                485                 490                 495
Phe Gly Pro Gly Ser Gln Val Cys Pro Tyr Met Met Gln Cys Arg Arg
            500                 505                 510
Leu Trp Cys Asn Asn Val Asn Gly Val His Lys Gly Cys Arg Thr Gln
        515                 520                 525
His Thr Pro Trp Ala Asp Gly Thr Glu Cys Glu Pro Gly Lys His Cys
    530                 535                 540
Lys Tyr Gly Phe Cys Val Pro Lys Glu Met Asp Val Pro Val Thr Asp
545                 550                 555                 560
Gly Ser Trp Gly Ser Trp Ser Pro Phe Gly Thr Cys Ser Arg Thr Cys
                565                 570                 575
Gly Gly Gly Ile Lys Thr Ala Ile Arg Glu Cys Asn Arg Pro Glu Pro
            580                 585                 590
Lys Asn Gly Gly Lys Tyr Cys Val Gly Arg Arg Met Lys Phe Lys Ser
        595                 600                 605
Cys Asn Thr Glu Pro Cys Leu Lys Gln Lys Arg Asp Phe Arg Asp Glu
    610                 615                 620
Gln Cys Ala His Phe Asp Gly Lys His Phe Asn Ile Asn Gly Leu Leu
625                 630                 635                 640
Pro Asn Val Arg Trp Val Pro Lys Tyr Ser Gly Ile Leu Met Lys Asp
            645                 650                 655
Arg Cys Lys Leu Phe Cys Arg Val Ala Gly Asn Thr Ala Tyr Tyr Gln
            660                 665                 670
Leu Arg Asp Arg Val Ile Asp Gly Thr Pro Cys Gly Gln Asp Thr Asn
        675                 680                 685
```

91

Asp Ile Cys Val Gln Gly Leu Cys Arg Gln Ala Gly Cys Asp His Val
    690   695   700

Leu Asn Ser Lys Ala Arg Arg Asp Lys Cys Gly Val Cys Gly Gly Asp
705   710   715   720

Asn Ser Ser Cys Lys Thr Val Ala Gly Thr Phe Asn Thr Val His Tyr
         725   730   735

Gly Tyr Asn Thr Val Val Arg Ile Pro Ala Gly Ala Thr Asn Ile Asp
        740   745   750

Val Arg Gln His Ser Phe Ser Gly Glu Thr Asp Asp Asp Asn Tyr Leu
      755   760   765

Ala Leu Ser Ser Ser Lys Gly Glu Phe Leu Leu Asn Gly Asn Phe Val
      770   775   780

Val Thr Met Ala Lys Arg Glu Ile Arg Ile Gly Asn Ala Val Val Glu
785   790   795   800

Tyr Ser Gly Ser Glu Thr Ala Val Glu Arg Ile Asn Ser Thr Asp Arg
        805   810   815

Ile Glu Gln Glu Leu Leu Leu Gln Val Leu Ser Val Gly Lys Leu Tyr
      820   825   830

Asn Pro Asp Val Arg Tyr Ser Phe Asn Ile Pro Ile Glu Asp Lys Pro
      835   840   845

Gln Gln Phe Tyr Trp Asn Ser His Gly Pro Trp Gln Ala Cys Ser Lys
      850   855   860

Pro Cys Gln Gly Glu Arg Lys Arg Lys Leu Val Cys Thr Arg Glu Ser
865   870   875   880

Asp Gln Leu Thr Val Ser Asp Gln Arg Cys Asp Arg Leu Pro Gln Pro
        885   890   895

Gly His Ile Thr Glu Pro Cys Gly Thr Asp Cys Asp Leu Arg Trp His
        900   905   910

Val Ala Ser Arg Ser Glu Cys Ser Ala Gln Cys Gly Leu Gly Tyr Arg
        915   920   925

Thr Leu Asp Ile Tyr Cys Ala Lys Tyr Ser Arg Leu Asp Gly Lys Thr
    930   935   940

Glu Lys Val Asp Asp Gly Phe Cys Ser Ser His Pro Lys Pro Ser Asn
945   950   955   960

Arg Glu Lys Cys Ser Gly Glu Cys Asn Thr Gly Gly Trp Arg Tyr Ser
        965   970   975

Ala Trp Thr Glu Cys Ser Lys Ser Cys Asp Gly Gly Thr Gln Arg Arg
        980   985   990

Arg Ala Ile Cys Val Asn Thr Arg Asn Asp Val Leu Asp Asp Ser Lys
      995   1000   1005

Cys Thr His Gln Glu Lys Val Thr Ile Gln Arg Cys Ser Glu Phe Pro
    1010   1015   1020

Cys Pro Gln Trp Lys Ser Gly Asp Trp Ser Glu Cys Leu Val Thr Cys
1025   1030   1035   1040

Gly Lys Gly His Lys His Arg Gln Val Trp Cys Gln Phe Gly Glu Asp
        1045   1050   1055

Arg Leu Asn Asp Arg Met Cys Asp Pro Glu Thr Lys Pro Thr Ser Met
        1060   1065   1070

Gln Thr Cys Gln Gln Pro Glu Cys Ala Ser Trp Gln Ala Gly Pro Trp
        1075   1080   1085

Gly Gln Cys Ser Val Thr Cys Gly Gln Gly Tyr Gln Leu Arg Ala Val
    1090   1095   1100

Lys Cys Ile Ile Gly Thr Tyr Met Ser Val Val Asp Asp Asn Asp Cys
1105   1110   1115   1120

Asn Ala Ala Thr Arg Pro Thr Asp Thr Gln Asp Cys Glu Leu Pro Ser
        1125   1130   1135

92

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Cys His Pro Pro Pro Ala Ala Pro Glu Thr Arg Arg Ser Thr Tyr Ser
          1140                1145                1150
Ala Pro Arg Thr Gln Trp Arg Phe Gly Ser Trp Thr Pro Cys Ser Ala
          1155                1160                1165
Thr Cys Gly Lys Gly Thr Arg Met Arg Tyr Val Ser Cys Arg Asp Glu
      1170                1175                1180
Asn Gly Ser Val Ala Asp Glu Ser Ala Cys Ala Thr Leu Pro Arg Pro
1185                1190                1195                1200
Val Ala Lys Glu Glu Cys Ser Val Thr Pro Cys Gly Gln Trp Lys Ala
               1205                1210                1215
Leu Asp Trp Ser Ser Cys Ser Val Thr Cys Gly Gln Gly Arg Ala Thr
          1220                1225                1230
Arg Gln Val Met Cys Val Asn Tyr Ser Asp His Val Ile Asp Arg Ser
          1235                1240                1245
Glu Cys Asp Gln Asp Tyr Ile Pro Glu Thr Asp Gln Asp Cys Ser Met
      1250                1255                1260
Ser Pro Cys Pro Gln Arg Thr Pro Asp Ser Gly Leu Ala Gln His Pro
1265                1270                1275                1280
Phe Gln Asn Glu Asp Tyr Arg Pro Arg Ser Ala Ser Pro Ser Arg Thr
          1285                1290                1295
His Val Leu Gly Gly Asn Gln Trp Arg Thr Gly Pro Trp Gly Ala Cys
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